

The Madiedo Meteorite Collection and its role in research, education and outreach

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Abstract

Although having a close look or even touching a fragment of, for instance, the Moon, planet Mars or even asteroid Vesta is fascinating, these rocks are also very useful from the scientific point of view. In fact, a meteorite collection can be a very valuable tool to get information from materials that played a fundamental role in the construction and evolution of our Solar System. Thus, meteorites are fragments from other worlds that provide us very valuable data about the origin and evolution of our planetary system and even can give us some keys about the possible origin of life on Earth. On the other hand, by means of meteorite exhibitions we can show the public how important these rocks are for Science and which are their main features. The fascination for these unique rocks led Prof. Madiedo to start a meteorite collection that nowadays consists of over 800 specimens. This collection was started with two main objectives. The first of them was to make these materials available to develop research projects related to meteoritics. And, on the other hand, to develop different education and outreach activities.

1. Introduction

The Madiedo Meteorite Collection is involved in research, but also in education and outreach projects. This is a private collection owned by Prof. Madiedo, who is also its curator, that nowadays consists of over 800 meteorites, but also includes thin sections, "meteorwrongs" and rocks obtained from impact structures produced by the collision of big rocks with Earth. A part of this collection, which contains many museum quality specimens (Fig.1), has been shown to the public in different occasions. Some of them can be also seen on-line at the Virtual Museum for Meteorites [1].

Although it contains specimens from all meteorite groups, the fall of the Puerto Lapice eucrite (Fig.2) in

2007 [2] had a very deep influence in the contents of this collection. Thus, Prof. Madiedo was one of the researchers that were involved in the search and study of this meteorite [3, 4], and the fascination for its beauty led him to collect an important number of achondrites belonging to the HED group.

2. Outreach activities

The first education and outreach activities where the Madiedo Meteorite Collection was involved were developed in 2007. Since then, a part of the specimens have been exhibited to the public in different places in Spain, in most cases in collaboration with museums, universities and other institutions.

One of the latest outreach activities was related to Mission Dawn and was started with the arrival of the Dawn probe to asteroid Vesta. Within this initiative, a wide number of HED meteorites were shown till January 2012 together with other contents related to this mission in the framework of the exhibition entitled "Vesta and Ceres: the origins of the Solar System".

A recent effort to overcome local boundaries and make this collection available to a global audience has resulted in the creation of the Virtual Museum for Meteorites [1]. This web-based tool can be accessed at <http://www.museodemeteoritos.es>.

3. Research

One of the primary aims when the meteorite collection owned by Prof. Madiedo was started was to obtain a wide number of samples coming from different bodies in the Solar System that could be employed for research projects related to meteoritics. In fact, this collection is a useful tool for researchers with the condition that just non-destructive test can be performed in order to preserve the beauty and

integrity of these rocks. Nowadays these specimens are involved in different studies, most of them based on the analysis of the reflectance spectra of these meteorites [5, 6].

4. Summary and Conclusions

The Madiedo Meteorite Collection is a tool available for research projects related to meteoritics where non-destructive tests are performed. The specimens play also an important role in education and outreach activities in Spain in collaboration with different institutions.



Figure 1: The Huckitta pallasite, recovered in 1937 in Australia, is one of the specimens of the Madiedo Meteorite Collection.

5. References

- [1] Madiedo, J.M., abstract #1300, 43rd Lunar and Planetary Science Conference, 2012.
- [2] Meteoritical Bulletin Nr. 93, MAPS 43, pp.571-632, 2008.
- [3] Llorca J. et al. Meteoritics & Planetary Science Vol. 44, Nr 2, pp. 159–174, 2009.
- [4] Trigo-Rodriguez J.M. et al. Meteoritics & Planetary Science Vol. 44, Nr 2, pp. 175–186, 2009.
- [5] Trigo-Rodriguez J.M. et al., abstract #1795, 42nd Lunar and Planetary Science Conference, 2012.
- [6] Trigo-Rodriguez J.M. et al., abstract #1443, 43rd Lunar and Planetary Science Conference, 2012.



Figure 2: Detailed image of one of the pieces of the Puerto Lápice meteorite. This specimen was broken during its flight in the atmosphere. The beauty of the black glossy fusion crust of this eucrite is one of the most prominent features of this meteorite.